

“Heaven’s Light is Our Guide”

Rajshahi University of Engineering & Technology

Department of Electrical and Computer Engineering



RUET

Project Title:**Agriculture assistant drone with 3D mapping****Objective:**

The main goal of the Project was to create an Artificial intelligence agriculture Drone and real-time avoiding obstacle using Lidar sensor.

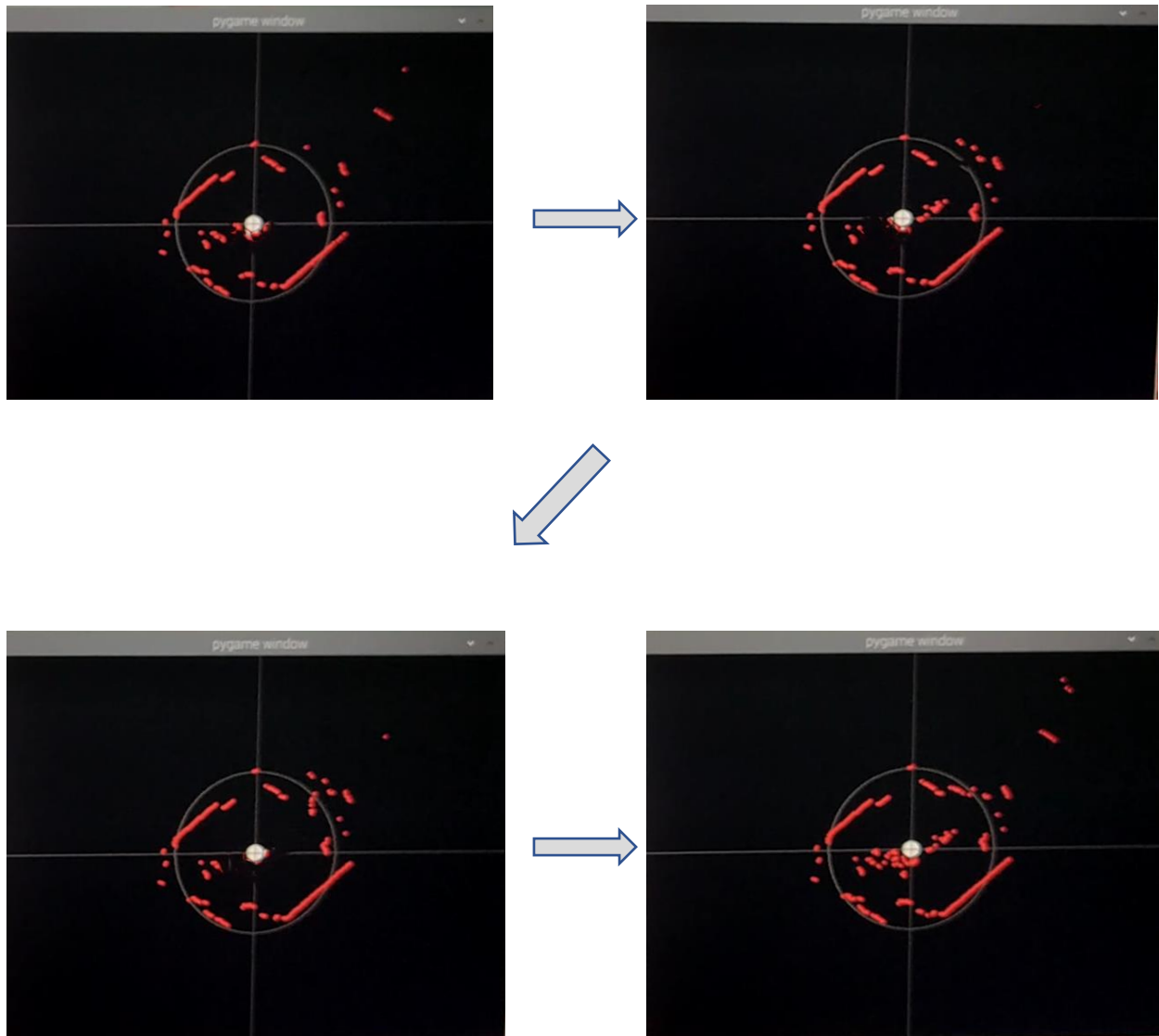
Introduction:

The world population has increases day by day and projected to reach to 9 billion people by 2050. In order to feed this larger, food production (net of food used for biofuels) must increase by 70 percent. Agriculture sector is the most promising sector and challenging sector because it is depending on climate or weather, condition of the soil, irrigation water, quality and quantity and their application rate. the required increase in food production can be achieved by adopting the advance technologies in agriculture production. The use of advanced technologies such as drone in agriculture offer potential for facing several major or minor challenges. The major application of drone in agriculture are irrigation, watering, crop monitoring, soil and field analysis. Research says that, a watering truck or any other helping agriculture truck is cost about 15000\$-20000\$ (US Dollar) where in this proposed system our drone cut that cost by 70% Also it will work efficiently than other system without any qualified pilot.

Our Agriculture drone will first map the corresponding field in 3D and consequentially monitor the area. By Analyzing the data, it will water the as it needs, Sow seed as requirement. Detect the crop health and react with the condition with proper fertilizer or insecticides.

Progress:

Here are some pictures of our progress:



In this picture we can observe that a man moving throughout the place. it can detect the any obstacle nearby in 2d plane. Which we can use it as a radar, if we get a 360-degree sphere data we can map the nearby in 3d simulation.

We have also achieved the autonomous flight-controlled drone. It can fly without any remote controller. We achieved this through the OpenCV python library. We can communicate with the drone anywhere from the world where internet connection is available.

We can see the live stream video of the drone by raspberry camera anywhere from the world, When internet connection available.

Advantage:

- It is autonomous. Don't need any man interaction.
- It is less costly than other autonomous system.

Limitations:

- Flight duration is the most challenging for the drone. We almost get around 10 min flight duration. But it is not sufficient. If we add more battery capacity it will increase its weight will not be efficient for the flight.

Solution:

- We are researching on dynamic wireless charging system to get continuous flight.
- Another solution will be creating a drone management system, if one drone (1) is out of charge another drone (2) will continue its job. In that mean time drone (1) will be in charge.

Conclusion:

We have created the agriculture drone with only watering feature. Further we will try to implement the above feature in our drone.

Through this project we have done 2d mapping through RPLIDAR sensor which is not very much effective without image.

So, we have selected another achievement goal that we will improve the mapping of surroundings by image Processing Which is already ongoing process.

Team Member:

1. Hasan al Muazzaz -1810038 (ECE 18)
2. Rafiur Rahman Saad -1810053 (ECE 18)

Honorable mention:

1. Honorable, Tasnim Binte Shawkat, Assistant Professor Of ECE (to provide the Equipment of this project)